

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
1 March 2001 (01.03.2001)

PCT

(10) International Publication Number
WO 01/13709 A1

- (51) International Patent Classification: A01J 5/00, G06F 3/16 (74) Agent: PRINS, A., W.; Vereenigde, Nieuwe Parkaan 97, NL-2587 BN The Hague (NL).
- (21) International Application Number: PCT/NL00/00578 (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (22) International Filing Date: 21 August 2000 (21.08.2000)
- (25) Filing Language: Dutch
- (26) Publication Language: English
- (30) Priority Data: 1012860 19 August 1999 (19.08.1999) NL
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- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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(54) Title: FARM AUTOMATION SYSTEM

(57) Abstract: The invention relates to a farm automation system comprising a farm computer for controlling processes at the farm such as milking and feeding of the animals and/or for building up a data file with animal data relevant to the farm, such as eating behavior, milk yield, temperature and milk resistance. The system further comprises speech synthesis means for transmitting information from the farm computer by means of speech, and speech recognition means for transmitting information to the farm computer by means of speech.

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Title: Farm automation system

The invention relates to a farm automation system comprising a farm computer for controlling processes at the farm such as milking and feeding of the animals and/or for building up a data file with animal data relevant to the farm, such as eating behavior, milk yield, temperature, milk resistance, etc.

5 Such farm automation system is known per se and is generally applied.

By a user such as the stock farmer, milk inspectors, claw attendants, inseminators and the like, the farm computer should be operated in a manner known per se via a keyboard and a mouse, for inputting information into the
10 farm computer and for reading out information from the farm computer.

A drawback of the known system is that data often have to be retrieved and/or inputted at the moment when the user needs his hands and/or eyes for executive operations. If the stock farmer is, for instance, in the proximity of an animal and wishes to store manually obtained animal
15 information in the farm computer, he will normally have to go to the farm computer. This requires extra time. Moreover, there is the risk that the stock farmer forgets and wrongly inputs the information. The same applies when the stock farmer needs information about those animals on the working site. In that case, he would likewise have to go to the farm computer for retrieving the
20 information.

A further drawback is that stock farmers sometimes have fear of computers and do not feel comfortable when operating the apparatus.

The use of a datalogger on the working site entails this drawback as well.

25 A further drawback is that dirty and wet operations poorly allow the use of pen and paper.

The object of the invention is to provide a solution to the above-mentioned drawbacks. Accordingly, according to the invention, the farm automation system is characterized in that the system further comprises

speech synthesis means for transmitting information from the farm computer by means of speech, and speech recognition means for transmitting information to the farm computer by means of speech. According to the invention, it is for instance possible for the stock farmer to simultaneously
5 input or retrieve data (information) into or from the farm computer at any desired place of the farm where, for instance, hands and/or eyes of the user are needed for executive operations. Of course, this can also be performed outside the farm.

A further advantage of the wireless speech interface is the fact that
10 much fewer cables and input terminals are required than in the case of a conventional farm automation system.

In particular, it applies that the system further comprises transceiving means coupled to the farm computer, at least one wireless microphone for making a speech recording and for wirelessly transmitting the speech
15 recording to the transceiving means for performing the speech recognition, and at least one wireless loudspeaker for transmitting speech information from the farm computer and via the transceiver to the loudspeaker for the speech synthesis.

Preferably, it applies that the wireless microphone and the wireless
20 loudspeaker are integrated into a wireless headset. Here, a headset also comprises an ear plug and a microphone. In this manner, the user has at any place his hands free for performing operations and can, via the wireless headset, simultaneously retrieve data from the farm computer and store data in the farm computer.

25 It is also possible that the wireless loudspeaker is designed as an ear plug and/or the wireless microphone is designed as a lapel microphone.

According to an alternative embodiment, it applies that the wireless microphone and the wireless loudspeaker are integrated as a wireless telephone.

Hereinafter, the invention will be specified with reference to the accompanying drawing. In this drawing:

Fig. 1 shows a possible embodiment of a farm automation system according to the invention.

5 In Fig. 1, reference numeral 1 denotes a farm automation system according to the invention. The farm automation system comprises a farm computer 2, known per se. In this example, the farm computer 2 is coupled to a milking robot 4 known per se and an automatic feeder 6 for controlling processes at the farm, such as milking and feeding the animals respectively.

10 The farm automation system further comprises a step counter 8, known per se, which, in a manner known per se, determines the movement behavior of the animals at the farm. The information generated by the step counter 8 is wirelessly fed to the farm computer 2 via an identification unit (9) for building up a data file with animal data relevant to the farm. The milking
15 robot 4 may further also be provided with means, known per se, for obtaining data about the animals. Thus, the milk yield of an animal, the temperature of the milk of the animal, the milk resistance together with the identity of the relevant animal may be determined by the milking robot 4. The milking robot 4 supplies these data to said data file of the farm computer 2.

20 The automatic feeder 6, too, may be provided with means for recording data about the animals. Thus, the automatic feeder 6 can determine to what extent an identified animal eats the concentrated feed provided to that animal. If an amount of concentrated feed remains behind, this can be measured by the automatic feeder 6. The automatic feeder 6 supplies the data thus obtained to
25 the farm computer 2 for further building up said data file. The data file can further contain other and/or fewer data.

The farm automation system further comprises a schematically shown display and keyboard 10 for retrieving information from the computer 2 and for inputting information into the computer 2.

The farm automation system further comprises transceiving means 12 coupled to the farm computer 2, at least one wireless microphone 14 and at least one wireless loudspeaker 16a, 16b. In this example, the wireless microphone 14 and the wireless loudspeakers 16a, 16b are integrated into a wireless headset 18.

The computer 2 further comprises hardware and software, known per se, for generating information in the form of speech signals. This concerns information which is, for instance, normally displayed on display 10. In this case, this information is supplied to the transceiver 12 in the form of speech signals. The transceiver 12 transmits this information wirelessly to the headset 18. By means of the loudspeakers 16a and 16b, a user can subsequently receive the relevant information in the form of speech.

When a user wishes to supply information to the computer 2, he only needs to speak into the microphone 14. Thus, by means of the microphone, a speech recording of the user is obtained. This speech recording is wirelessly transmitted to the transceiving means 12. The speech recording 12 received is passed on to the computer 2. The computer 2 comprises hardware and software known per se, for performing speech recognition. In the speech recognition, digital signals are formed which can be further processed by the computer. These signals replace, for instance, the signals which are normally fed to the computer 2 via the keyboard 10. Hence, the system is provided with speech synthesis means (2, 12, 16a, 16b) for transmitting information from the farm computer to a user by means of speech, and with speech recognition means (14, 12, 2) for transmitting the information to the farm computer by means of speech.

The information transmitted via the microphone 14 to the farm computer may, for instance, consist of commands for the farm automation system, so that the processes mentioned can thus be controlled. It is also possible that said speech comprises data that have to be stored in the file

mentioned. Also, said speech may comprise a request for information which is subsequently supplied to the headset 18 in the form of speech.

In addition to the headset 18 or instead of the headset 18, the farm automation system may further comprise a wireless telephone 20, known per se, into which a microphone 14' and a loudspeaker 16' are integrated. The transceiving means 12 may then comprise a base station, known per se, associated with the portable telephone. The farm automation system may also comprise a wireless microphone 14" in the form of a lapel microphone, the wireless loudspeaker 16" being designed as an ear plug.

Further, the wireless loudspeaker and the wireless microphone may form a part of a GSM telephone 22 known per se. In that example, the computer 2 is in connection, via a modem 24, with the telephone network which, in turn, is connected to the GSM network. In this manner, a speech interface can be formed between the farm computer 2 and a user, as is discussed entirely analogously for the headset 18 and the transceiver 12. In fact, the GSM network then constitutes a transceiver of the farm automation system. Also, use can be made of another type of wireless telephone and associated telephone network. The above-mentioned loudspeaker 16a, 16b may also be of a non-wireless type. Thus, one or more loudspeakers can be connected to the farm computer for producing the speech signals loud. Such variants are each understood to fall within the framework of the invention.

Claims

1. A farm automation system comprising a farm computer for controlling processes at the farm such as milking and feeding of the animals and/or for building up a data file with animal data relevant to the farm, such as eating behavior, milk yield, temperature, milk resistance, etc., characterized in that
5 the system further comprises speech synthesis means for transmitting information from the farm computer by means of speech, and speech recognition means for transmitting information to the farm computer by means of speech.
2. A farm automation system according to claim 1, characterized in that
10 the system further comprises transceiving means coupled to the farm computer, at least one wireless microphone for making a speech recording and for wirelessly transmitting the speech recording to the transceiving means for performing the speech recognition, and at least one wireless or non-wireless
15 loudspeaker for transmitting speech information from the farm computer and via the transceiver to the loudspeaker, for the speech synthesis.
3. A farm automation system according to claim 2, characterized in that the wireless microphone and the wireless loudspeaker are of integrated design in a wireless headset.
4. A farm automation system according to claim 2, characterized in that
20 the wireless loudspeaker is designed as an ear plug and/or the wireless microphone is designed as a lapel microphone.
5. A farm automation system according to claim 2, characterized in that the wireless microphone and the wireless loudspeaker are of integrated design as a wireless telephone.
- 25 6. A farm automation system according to claim 5, characterized in that the transceiver consists of a base station of the microphone.

7. A farm automation system according to claim 5, characterized in that the telephone consists of a wireless telephone wherein the at least one transceiver forms a part of the telephone network.

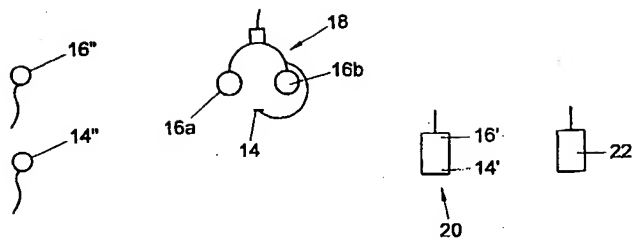


Fig. 1

INTERNATIONAL SEARCH REPORT

Int. l. Application No.
PCT/NL 00/00578

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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 911 808 A (SONY INTERNATIONAL EUROP GMBH) 28 April 1999 (1999-04-28) page 2, column 2, line 55 -page 3, column 2, line 15; figure 1 page 5, column 8, line 54 -page 6, column 9, line 10; figure 5 page 7, column 11, line 1 - line 10; figure 7A claims 1,7-10	2-7
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INTERNATIONAL SEARCH REPORT

In. tional Application No
PCT/NL 00/00578

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 A01J5/00 G06F3/16		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 A01J G06F		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) WPI Data, PAJ, EPO-Internal		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Y	US 4 776 016 A (HANSEN PER K) 4 October 1988 (1988-10-04) abstract; figure 3 column 7, line 21 - line 38	1-7
-/--		
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Date of the actual completion of the international search <div style="text-align: center;">26 September 2000</div>		Date of mailing of the international search report <div style="text-align: center;">04/10/2000</div>
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer <div style="text-align: center;">Wanzeele, R</div>